SC ALUM SA TULCEA

Approved
General Director
PhD. Eng. Gheorghe DOBRA

Plan to perform activities regarding production, maintenance, repairs and investment during the year - 2020

For 2020 there were analyzed the production schedule and the requirements regarding the works, materials, personnel costs in order to achieve the production plan and maintenance work, factory arrangements, at each installation level.

There were set the specific consumptions and operating technological parameters for Sierra Leone bauxite.

Also for alumina production and raw materials specific consumptions optimization it is envisaged to continue the cooperation with research institutes and consultancy companies from Romania and France (Technical University of Civil Engineering Bucharest, IPROLAM Bucharest, IPROCHIM Bucharest, Politehnica University of Timisoara, Amber Development, ICPA Bucharest)

A. Production and Mechanical & Electrical Departments

Considering all activities at the programmed production level for 2020 the number of employees was established at 775.
For the optimal production activity were carried out theoretical and practical training to all staff, both professional training and related to health and safety at work.

For 2020, according to the employee training program, courses will be organized for a number of 150 persons for activities such as: chemical operators (2 classrooms), training courses in electrical and PRAM for employees in production and maintenance-repair (chemists operators, welders, locksmiths, electricians, operational staff)
Also it is considered to assure the reauthorization of employees working as crane operators, stoker, load binder, forklift driver and authorized installer of natural gas, whose permits expire in 2020(according ISCIR prescriptions).

In order to improve the activity according to the management standards for which we are certified, SR EN ISO 9001: 2015, SR EN ISO 14001: 2015, SR EN ISO 45001: 2018 and SR EN ISO 50001: 2019, training courses are scheduled in the field, as well as and for the implementation of the conditions of the SR EN ISO 17025: 2018 standard in the ALUM laboratory.

Also, starting with the autumn of 2019, begun a training course for Technological Foreman (metallurgy) 2 years long. Number of participants: 28.

Work	Organization chart	Of which administrative personnel	Personnel activity
Production activity	**406**	**17**	Provides technical operations for the production of alumina
Mechanical & Electrical activity	**162**	**13**	Ensure the Maintenance and repair of equipment for the technological flow and participate at investments works
Transportation	**50**	**3**	Ensure the bauxite supply for grinding and also ensure the domestic transport needs. Rest of bauxite and alumina transport services being outsourced.
Planing	**7**	**8**	Provides production and repairs planning
Other activities	**150**	**72**	Auxiliaries and general services activities (commercial, financial, HR, IT, health and safety and environment, investment, laboratories)
TOTAL	**775**	**113**	

B. Production Activity

For the year 2020 it was budgeted a level of production of 427,250 tones alumina, out of which 364,550 tones calcined alumina. Deliveries to Alro Slatina 357,650 tones calcined alumina. Shipping to export / others 10,850 tones alumina calcined. Other sales are in amount of 103,200 tons aluminum hydroxide.

There were established the technological equipment used primarily in order to achieve the planned production. There were established the operating parameters for Sierra Leone (1,228,332 tons) bauxite processing.
There are made action plans for reducing specific consumption of bauxite, caustic and thermal energy.

It is considered to study the possibility of using red slurry as a raw material for other industrial activities (construction, agriculture, etc.). Continue pilot scale tests to use red mud to improve acidic soils performed with ICPA Bucharest.

It is taken into consideration the continuation of developing new products, for special applications, and increasing the amounts of these products in total production of Alum. The products are: dry hydrate, calcined alumina containing alpha phase greater than 70%, low soda alumina.

Will continue the tests to determine the technologies for obtaining high added value products, namely the technologies for obtaining dry, seated and ground hydrate.
The equipment will ensure the possibility of obtaining three different types of dry hydrate depending on the granulometric distribution obtained (0-45 microns, 45-100 microns, 0-100 microns). The production capacity is 8 t / h for the production of dry hydrate and 6 t / h for the production of milled hydrate (0-45 microns).

Alumina production

Month	Calcined alumina production t/month	Alumina production t/month
January	31,000	37,200
February	28,000	33,600
March	32,550	34,100
April	26,400	33,000
May	31,000	37,200
June	31,500	36,000
July	31,000	35,650
August	31,000	37,200
September	30,000	36,000
October	28,000	34,100
November	33,000	36,000
December	31,000	37,200
Total	364,550	427,250

Production of dry hydrate, sieved and ground

Month	Dry hydrate t/month	Sieved hydrate t/month	Ground hydrate t/month
January	1,292	250	167
February	1,292	250	167
March	1,292	250	167
April	1,292	250	167
May	1,292	250	167
June	1,292	250	167
July	1,292	250	167
August	1,292	250	167
September	1,292	250	167
October	1,292	250	167
November	1,292	250	167
December	1,292	250	167
Total	15,500	3,000	2,000

C. Department Maintenance-Repairs Activities

C1. Maintenance and repairs activities

Main activity of the Department of Maintenance and Repair is keeping in running the installation and repairing the equipment according the approved Plan for Revisions and Repairs.

The budget for these activities in 2020 has a value of **4,164,011 USD** out of which **1,539,812** USD represents repairs that will be performed by third companies, **2,39,655** USD represents repairs done in-house and **232,543** USD there are maintenace services.

Major repairs performed by other companies:

- Repair electrical motors and coolers - 98,646 USD
- Repair Building Grinding - 99,531 USD
- Repair tower crane MTO 160 - 74,941 USD
- Boiler C2Ap Nr, 2 – repairs - 165,807 USD
- Repair building at Lime station - 88,992 USD
- Repair Grinding Mill no 2, 3, 4 - 49,765 USD
- Repair of waterproofing buildings - 74,941 USD
- Thermoinsulations for pipes and tanks - 140,515 USD
- Repair turbogenerator CKTR 12 MWh - 39,812 USD
- Repair refractory masonry for Static Kiln - 46,838 USD
- Repair refractory masonry for Rotary kiln no 3 - 88,992 USD
- Repair tanks water chemical treatment - 14,051 USD
- Turbocharger revisions TK 250 - 36,533 USD
- Repair and overhaul of heavy machinery (car park) - 182,458 USD
- Repairs Internal Rail ways - 56,206 USD

Major repairs performed with own forces:

- Repairs conveyor belts – 64,118 USD
- Repairs bauxite grinding mills – 406,521 USD
- Repairs on digestion batteries – 75,438 USD
- Repairs tanks DN 20 m – 24,786 USD
- Repairs tanks DN 35 m (major repairs) – 43,071 USD
- Repairs precipitation tanks – 99,782 USD
- Repairs on Static Calciner (1 repair) – 47,880 USD
- Repairs on Rotary Calciner no 3 – 39,267 USD
- Repairs bag filter – 65,776 USD
- Repairs for Kelly Filters – 45,748 USD
- Repairs boilers – 56,865 USD
- Repairs compressors – 59,317 USD
- Repairs pumps – 561,818 USD

C2. Investment activities implemented with own forces

Maintenance and Repair department also develops specific activities to achieve with own forces putting into operation of approved investment objectives.

Investments implemented with own forces

- Install China pumps with increased energy efficiency;
- Arranging storage space for wet hydrate bags;

Maintenance and repair department personnel also participate in tracking and completion of the works of investments made by third companies and provide the conditions necessary for the function of these investments.

C3. Continuous Improvement Activities

Besides maintenance and repair works, alike the planned investment, the Maintenance and Repair department have activities in accordance with approved plans to continuously improve the ALUM's operation of the equipment and installations, works to reduce energy consumption (air, industrial water, air, energy Electric), works to reduce specific consumption of raw materials and energy (air, industrial water, electricity), to increase capacity of the installed production equipment, work for environmental protection, continuing the implementation of the predictive maintenance in Alum.

Activities performed

- Continuation of the program to optimize the lighting in plant installations by replacing old incandescent lighting with new systems using LED technology.
- Installation of flocculant solution dosing pumps for dosing in the process of Red Filtration;
- Mounting of speed changers purchased under the Energy Efficiency Program.
- Extension of the calcined alumina loading system in trucks, in parallel with the loading of wagons
- Extend the heating system for strong liquor using the heat of the filtered pregnant liquor

D. Investments Activity

The ALUM's investment program for 2020 amounts **5,081,000 USD** and comprises a total of 7 investment projects, divided into the following chapters:

- **Chapter 1 - Projects previously approved and under implementation -** includes a total of 4 investment projects requiring a forecast budget of **2,469,000 USD**;
- **Chapter 2 - Projects to ensure operating conditions and safe continuity of the production process (maintenance capex) -** includes a total of 3 investment projects requiring a forecast budget of **2,612,000 USD**;

The investment projects are required to be implemented for compliance with environmental regulation, technological process safe operation for alumina production, reduce the specific consumption of heat, electricity and raw materials and for production diversification in Alum.

E. Budget proposed

Alum's budget for 2020 provides total revenue of 163,845,499 USD from the sales of calcined alumina and hydrate. Also included other revenues in amount of 2,355,096 USD.

Total expenditures budgeted required for the production of 427,250 tons is 165,560,508 USD. Thus, in the budget for 2020 is estimated a profit in amount of 527,631 USD.

Unit production costs are budgeted at 218.98 USD/ton of hydrate and 385.57 USD/ton for calcined alumina.

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